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Chapter One
OVERVIEW AND GETTING STARTED

Overview

The Battle of Britain started on July 10th 1940. It was the beginning of a campaign by the Luftwaffe to destroy the defensive capabilities of British Fighter Command. The ultimate aim was a sea-based invasion of southern England in an operation codenamed Sealion. But it was recognised that air supremacy was vital if that operation was to succeed.

Although there were expectations in Germany for a quick victory, the air campaign lasted for well over two months. The battle went through a series of phases, that culminated in a major air battle over London and southern England on September 15th 1940. That event is still celebrated in Britain as 'Battle of Britain' day. Two days later German plans for Operation Sealion were shelved. In a technical sense the battle continued into a new phase through October 1940, but this simulation ends with the events over London in mid-September.

Rowan's Battle of Britain is one of the most ambitious simulations of aerial war ever produced. A player can take the role of a commander on either side of the conflict and can follow the entire campaign from July 10th to September 15th 1940, or can take part in one of twenty-eight specially designed individual flying missions. Some of the Luftwaffe's 1,000 aircraft raids are reproduced, affording a unique insight into what it might have been like flying against, or with, such numbers of aircraft.

In 'Campaign' Mode the player can select one of four starting points to enter the air war. The campaign begins with attacks on British coastal shipping by the Luftwaffe, who then move on to attacking radar installations, coastal facilities and airfields. This is followed by concentrated attacks against the RAF's major airfields and aircraft factories, which leads on to the final showdown during the 'Blitz' of London in September 1940. Players can take the role of a commander dealing with the strategic overview of the conflict using authentic campaign maps.

The specially designed quick-missions take the player from 'Basic Training', which involves starting the engine and learning to take off from a grass strip, to the more advanced areas of formation flying and dog-fighting. A number of historic missions are based on actual engagements, and these culminate in a massive simulation of the final raid of the war on September 15th 1940 - Battle of Britain Day.

Manual Layout

The Battle of Britain manual is laid out in eight chapters.

Chapter One contains an overview, followed by full installation instructions and a quickstart list that will get you off the ground and flying in the minimum amount of time.

Chapter Two describes, in Section 1, the function of the Main Menu and details the Replay facility within the game. It is followed, in Sections 2 and 3, by full descriptions of the PC configuration and Simulation configuration screens. These screens allow you to set all of your preferences for the game.

Chapter Three lists the available missions in the Quick Shots section of the game. These are individual scenarios that put you in a variety of flying and combat situations. The layout of the Quick Shots screens is described in full.

Chapter Four details the game's Campaign system. The general functionality of the campaign is described in the first section. Sections 2 and 3 provide tutorials for the Campaign from the perspective of a Luftwaffe Commander and an RAF Commander, respectively.

Chapter Five deals with the Multi-Player aspects of Battle of Britain. All of the multi-player facilities are described in detail.

Chapter Six is a large chapter dealing with flying and the aircraft available to fly in Battle of Britain. Section 1 lists the available aircraft controls in the simulation. Section 2 shows cockpit layouts that can be manipulated in 'interactive cockpit' mode. Section 3 focuses on engines and propellers. Section 4 shows how to start your engines, taxi and take-off. Section 5 concentrates on solo and formation flying. Section 6 deals with combat manouevres. And, finally, Section 8 provides technical summaries of the major aircraft in the game.

Chapter Seven, The Battle of Britain Remembered, is a specially commissioned historical perspective of the battle by author Dilip Sarkar.

Installation

A. INSTALLATION INSTRUCTIONS

To install Rowan's Battle of Britain, please make sure that you follow the instructions below.

1. Insert the CD-ROM into the CD-ROM drive. If the game proceeds to autorun then go to step three.
2. Click on the START button on the Windows taskbar and select RUN, followed by BROWSE. Select your CD-ROM drive after clicking on the down arrow to the left of the LOOK IN box. Double click on the file named SETUP.EXE followed by OK.
3. You will be prompted to highlight your preferred language. Make your choice and click OK.
4. A welcome message will be presented. Click on the NEXT button to continue.
5. Select the destination directory where you wish this product to be installed. You can use the BROWSE button to change to a different destination. Click on the NEXT button when you are happy with your selection.
6. Select the program folder for the game installation. If you click NEXT then the default folder name is 'Battle of Britain'.
7. Rowan's Battle of Britain will now start installing. This will take a few minutes.
8. When the installation is complete, click on the FINISH button. Direct X will verify your system drivers and update them as necessary. You may be asked to restart your machine.
9. To play the game click on the START button and select PROGRAMS, EMPIRE INTERACTIVE, BoB, BATTLE OF BRITAIN.
10. If you have any problems, then try and repeat this process again. Read the minimum specification details on the side of the box and ensure that your machine accords with these. In case of further problems, look at the details in the Technical Support section at the back of this manual, or consult the "README.TXT" file via the Windows Start Menu (Programs->Empire Interactive->Battle of Britain->README.TXT)

B. UNINSTALLING BATTLE OF BRITAIN

PANEL to bring up the Windows control panel. Double click on ADD/REMOVE PROGRAMS to bring up the add/remove programs properties box. Look for Battle of Britain under the installed software list and select the ADD/REMOVE button. Follow the on-screen instructions.

Getting Started

QUICKSTART

1. Install and load the game as referred to in the installation section above.
2. Rowan's Battle of Britain begins with an animated title sequence. This can be terminated at any time by clicking on your left mouse button.
3. You will be presented with the Main Menu of the game, which allows you access to every area of the simulation. The Main Menu is described in detail in Chapter Two.
4. Select the Sim Config option in the Main Menu. Use the left mouse button to make all selections. This displays a set of simulation configuration options that allow you to configure the flight simulation properties for your game. Look at the second option from the top - Flight Model. This can be set to either Novice or Realistic. If you are relatively inexperienced with PC flight simulations then you will wish to choose the very forgiving Novice option. On a Novice setting it is almost impossible to put your aircraft into an uncontrollable spin, and landings are rarely fatal. Select the Realistic setting if you are a more experienced flyer.
5. Select CONTINUE at the top right of the screen to return to the main menu.
6. Select PC Config from the main menu. The PC configuration screens allow you to configure a wide range of details that relate to your display, sound and control capabilities. Select the Controller option - the third from the left at the top of the screen.
7. Ensure that you have selected an appropriate input device. We strongly recommend that you use a joystick with this simulation. Assuming that you have a joystick, select the 'calibrate' option for your joystick, in order to ensure maximum control. Make sure that your joystick type has been enabled (has been ticked) and 'stick' is set to its X and Y axis. That way you will be controlling your aircraft in the most authentic manner. Of course, there are also options to add extra input devices such as rudder pedals.

9. Select the Quick Shots option at the top of the main menu. This option allows you to fly in one of twenty-eight pre-designed missions. The default first scenario is a Basic Training mission involving your plane taking off. Using the radio buttons you can change your aircraft and airfield. If this scenario is too simple for you, by all means choose something more complex. You may, however, find the Historic raid on September 15th 1940 a bit too much at this stage!

10. Click on the Fly option at the bottom of your screen, and once you have noted which squadron you have been assigned to, select Fly once more in order to load the simulation.

11. Assuming that you have chosen the Basic Training Take-off scenario, you will be on a runway ready for take-off. You should release your left and right wheel brakes (using your [,] and [.] keys), set your throttle to 100% (hit the [0] key or turn your joystick throttle axis to full) and as your Spitfire picks up speed gently pull back on your joystick. You may find it more comforting initially to use the Outside View, which provides a third person view of your aircraft (hit the [F6], backspace key or use the 4th button on your joystick). Control is now in your hands!

12. If you wish to pause the game while in flight, press [P]. For more information on how your aircraft is performing whilst flying, press [I]. Use the joystick to control your aircraft's attitude and direction when flying. Pull the joystick back and the nose of the aircraft will rise and you will start to climb. Push the joystick forward and the nose will drop and the aircraft will begin to dive. Moving the stick to the left or right causes the aircraft to roll in that direction. To turn gently, roll the aircraft into a bank and then ease the stick towards you. Extreme or sudden movement of the stick can cause the aircraft to stall or spin. If you do not have a throttle enabled on your joystick use the number keys to control the engine power settings ([_] off, [1] minimum, [0] maximum). See Chapter Six for more details on flying.

13. Once you have mastered the basic controls, you can end a Quick Shot mission at any time by selecting the key combination [Alt][X]. A combat report will be displayed at the end of the mission, that will summarise what happened during the mission. Select BACK to return to the Quick Shot missions selection screen.

CREDITS

Select the credits option on the Main Menu to view the team that put Battle of Britain together. Select your left mouse button at any stage to return to the Main Menu.

QUIT

The quit option leaves the Battle of Britain and takes you back to Windows.

WEB SITE

Select the Web Site option to open up your default web browser and connect to the Battle of Britain web site. You will already need to be connected via your Internet Service Provider if you are to connect successfully. The web site contains information regarding the latest news on the product.

Section Two

PC CONFIGURATION

The PC configuration menus have five main pages that relate to the preferences associated with your PC setup. You can move from page to page using the five active areas at the top left of the screen:

- 3D
- 3DII
- Controller
- Sound
- 2D

There are also two options at the top right of the screen. Sim takes you to the Sim Config screens, discussed in Section Three of this chapter. Continue either takes you back to the previous screen or back to the 3D to continue your flight.

All of the configurations options are displayed within what are known as 'combo' boxes. These can be manipulated either by selecting the down arrow on the right hand side of the box and choosing from the list within the drop-down menu that is displayed, or by clicking on the main part of the box, and cycling through the available options one at a time.

Once you have made your choice of PC preferences, they are saved when you exit the game using the main menu Quit option.

If you find that you are no longer able to play the game and are unable to change the options to a safe set the configuration file can be deleted. The file is c:\Program Files\Rowan Software\Battle of Britain\SAVEGAME\SETTINGS.CFG - if you installed the game to the default location.

3D

The 3D page of the PC Config menus contains the following options:

- **Display Driver**
  This combo-box holds the 3D drivers on your PC that Battle of Britain has detected. The displayed driver is the one that is currently selected.

- **Resolutions**
  These are the range of resolutions that your current display driver can use to display the 3D simulation section of the game.

- **Gamma Level** ***Minimum, Low, Medium, High, Maximum***
  Every 3D video card and monitor setup produces a different brightness and contrast output. The Gamma Level option allows you to set the monitor output to a level of your taste without altering your standard monitor settings. Choose lower options to darken the image or higher options to brighten it.

- **Lowest Frame-Rate** ***5 through to 34***
  This allows you to set the lowest frame-rate at which you wish the game to run when auto frame-rate (below) is on.

- **Auto Frame-Rate** ***On, Off***
  When Auto Frame-Rate is enabled (on), the game automatically turns 3D detail and other features on or off to attempt to maintain a frame-rate that is higher than the lowest frame-rate setting (above). These changes will be stored for the next time you go into the 3D. In general, the more 3D detail

- **Ground Shading** *On, Off*
  This controls the shading of light on the ground. Light shading takes processor time, so if that is a concern, then turn it off.

- **Item Shading** *On, Off*
  Item shading can be turned on or off. It controls the light shading on aircraft and other moving objects.

- **Reflections** *On, Off*
  If reflections are turned on then a cockpit mirror will be drawn if present in that aircraft model. Also the in-cockpit canopy and instrument glass will have reflections which fade out depending on the angle to the sun.

- **Weather Effects** *Clouds On, All Off*
  With weather effects off there is simply a general average cloud base. If clouds are turned on individual clouds will be displayed. These are realistic, but have an impact on the frame rate on slower machines.

3DII

The 3DII page of the PC Config menus contains the following options:

- **Filtering** *None, Bi-Linear, Tri-Linear, All*
  These filtering settings increase the quality of image-mapping.
  The "all" setting enables multi-textured dithering effects and may not be supported by all cards.

- **Smoke** *On, Off*
  This option toggles smoke special effects and early morning fog banks.

- **Texture Quality** *Minimum, Low, Medium, High, Maximum*
  The level of texture quality has a considerable effect on the displayed frame-rate but improves the quality of certain aspects of the 3D, especially the cockpit view.

- **Town and Forest Raises** *On, Off*

- **Routes** ***On, Off***
  The display of small roads, rivers and rail lines can be turned on or off with this option.

- **A/C Shadows** ***On, Off***
  When this option is turned on then aircraft shadows are visible on the ground.

- **Item Shadows** ***On, Off***
  This option toggles the visibility of ground shadows for objects other than aircraft.

- **Horizon Distance** ***Near, Far***
  With Near Horizon enabled, the ground detail does not extend as far into the distance, but the frame-rate is improved. Far Horizon will not be selected by default if your video card cannot run with a z-buffer of greater than 16 bits. This feature may require a colour depth of 24 to 32 bits depending on the graphics card and adapter.

- **Detail Level** ***Minimum, Low, Medium, High, Maximum***
  Detail has a range from minimum through to maximum. It allows the detail level of the landscape and shapes to be altered. The smaller the level of detail the greater the gain in frame rate. High is our designed level, but we have provided Maximum for future improvement in machine specifications.

- **G Effects** ***On, Off***
  With the effects of G (gravity) turned on, then it is possible for you - the pilot - to blackout and red out, depending on the manoeuvres you make.

- **Injury Effects** ***On, Off***
  This toggles the display of injury effects if the pilot is hit.

- **White Outs** ***On, Off***
  The white out option toggles the display of sun glare on and off.

CONTROLLER

There are five basic control inputs for the flight model - elevators and ailerons; rudder; throttle and propeller pitch. These are all analogue inputs and they can all be linked to hardware devices such as a joystick, throttle levers and rudder pedals, as well as being controllable via the keyboard. In the case of twin-engined Bf110, a second throttle and propeller pitch can also be linked to a hardware device, allowing the player to control the two engines independently. If only one hardware device is available for controlling the throttle or propeller pitch, pressing the [E] key will allow the player to cycle through the engines to be controlled by the primary hardware inputs.

There are further details on aircraft control in Chapter Six Section One.

The controller page of the PC Config menus contains the following options:

- **Input Device**
  The input device selection displays all of the valid input devices that Windows currently has connected. It is recommended that you use a joystick with Battle of Britain. Make sure that the selection is valid for your input device. If you are unsure that your device has been calibrated recently then use the calibration option. This brings up the standard Windows Control Panel calibration procedure

- **Enable**
  Ensure that the tick box is enabled beside the controller type you wish to use with the game.
  If you have a number of input devices it is possible to enable a number of them, but it is recommended that you only enable the devices you will actually use with this simulation, as each extra enabled device requires processor time and resources.

- **Use for FF**
  If you have a 'force feedback' joystick then you can tick this box. If your controller is not force feedback enabled then this feature will be greyed out. You can also disable or select 5 different feedback levels for each of the

- Buffet transmits vibration caused by buffeting if you are near the stall condition, close to an explosion, or close to the speed of sound (unlikely).
- Aerodynamic setting causes stiffening of the controls at high speed.
- Airframe transmits vibrations transmitted through the airframe from the ground - i.e. when you are taking off or landing (or crashing!).

The lower section of the controller page details the aircraft-specific control provided by your input device. There are three extra columns that provide extra choices for each input:

- **Dead Zone**
  Most of the options below have independent dead zone settings. The dead zone is the region at the centre of the stick where no control input is provided to the aircraft. The player can choose to set the deadzone to Small, Medium or Large depending on the quality of the hardware being used. Generally speaking, for a joystick which centres well, and produces a signal which is steady and with little noise, a small deadzone is appropriate. However, if, when the joystick is released, it does not zero exactly or the signal continues to vary, this can be compensated for by selecting a larger deadzone. You will need to find the best arrangement by trial and error.
- **Mode**
  In addition to setting the size of the deadzone, the player can also select between a Realistic and a 'Sim' mode for the elevator, aileron and rudder inputs. The Realistic mode makes the flight model response fairly sensitive to the control inputs, just like flying a real aircraft, whereas the Sim mode attempts to offer a much less sensitive response and allows the player to make fairly large control inputs with less danger of over-controlling or stalling. The choice of which mode to use depends on personal preference and player experience.
  For other axes, the mode combo offers low, medium, or high sensitivity for mouse or joystick input.
- **Flip**
  Where available, the vertical flip toggle will change a forward movement of the device into a downward movement on the display.
  The horizontal flip toggle has a similar effect on sideways movement

The various controls offered are as follows:

- **Stick**
  The 'stick' controls both your aileron and elevator. It is most natural to assign the first two axes of your joystick to this setting. The stick mode can be set to a sim or more challenging realistic setting.
  When this combo is set to keyboard, the arrow keys on the keyboard must be used for flight (not recommended).

- **Rudder**
  This provides control of your rudder, which yaws the aircraft in flight, or steers the rear wheel when taxiing.

- **Throttle**
  The throttle provides control for selecting the desired engine power.
  When this combo is set to keyboard, the row of numbers on the main keybard can be used to select the throttle level in 10% increments
  There is a second box for the Bf110, which has two throttle levers, one for each engine. When this second combo is set to keyboard, the two throttles can be controlled either together or individually. In flight, pressing E will cycle through the available engine to control - both together, port engine only or starboard only.

- **Prop Pitch**
  The propellor pitch controls the angle of the propeller blades. This can be used manually, just like the gearbox in a car, to maintain the correct engine speed. Or it can be controlled automatically by the computer.
  When this combo is set to keyboard, Shift and 9 gives maximum prop pitch (and therefore lower rpm) whilst Shift and 0 gives minimum prop pitch (and higher rpm).
  Shift in combination with the - and + keys will increase and decrease (repectively) the propellor pitch by smaller increments (having the opposite effect on the rpm).

- **View pan**
  This 2-axis control is used to scroll the view horizontally and vertically.
  When this control is mapped to the mouse you may wish to adjust the sensitivity using the mode combo box.
  When this control is mapped to a head input device, you may also wish to set a large dead zone to avoid the display shaking with every wobble of the head. You may also need to experiment with the flip toggles to match head

2D

The Battle of Britain front-end artwork is designed to run on a 1024x768 Windows desktop. However, the main 2D campaign planning map can be displayed at any resolution you wish to use.

If you generally use a higher windows desktop resolution, then these options allow you to reduce the number of mode change transitions at the price of large borders around the artwork.

If you have problems initially viewing the intro artwork then the command-line option –BORDER will force all these options to "windows desktop" resolution.

The 2D page of the PC Config menus contains the following options:

- **Map Screen**
  This sets the resolution of the 2D campaign planning map screen. By default it is set to match your Windows desktop resolution, but it can be altered from between 640x480 and the maximum resolution of your system. Note that your monitor may not support all the modes that your graphics card reports.
- **Colour Depth**
  The colour depth allows you to change the bits-per-pixel colour depth between 16 (High Colour) and 32 (True Colour)
  Your Windows desktop setup may not allow you to change the colour depth on the fly, so this option may have no effect.
- **Intro Artwork**
  Allows you to alter the resolution of the video footage as the game loads up. The options here are
  - 640x480 (or 512x384 if supported) to show the video full-screen
  - 1024x768 to match other 'scramble' screens
  - 'Desktop' to match your desktop
- **Map Events**
  This resolution is used whenever a full-screen is required after visiting the campaign map. This includes the Encyclopedia and the

full-screen at 1024x768 or at the current map screen resolution, which may, of course, be 1024x768.

- **Scramble**
  The display resolution for the main menu screen and all screens from here, including scrambling for a quick-shot are controlled from here. These can be viewed full-screen at 1024x768 or at the current desktop resolution.

Section Three

SIM CONFIGURATION

The Simulation configuration menus have four main pages of preferences associated with the setup of the simulation when you are flying. You can move from page to page using the four active areas at the top left of the screen:

- Flight
- Game
- Mission
- Views

There are also two options at the top right of the screen. PC takes you to the PC Config screens, discussed in Section Two, above. Continue either takes you back to the previous screen or back to the 3D to continue your flight.

All of the configurations options are displayed within 'combo' boxes. These can be manipulated either by selecting the down arrow on the right hand side of the box (and then choosing from the list within the drop-down menu that is displayed), or by clicking on the main part of the box (and cycling through the available options one at a time).

FLIGHT

The Flight page of the Sim Config menus contain the following options:

- **Flight Options**
  Minimum, Low, Medium, High, Maximum, Custom

difficulty levels. For instance, minimum uses the Novice flight model with most of the options turned off, and maximum will set up the full flight model with the options set up to give full realism. If you manually change the options below, then the Flight Options box will show "custom".

- **Flight Model** ***Realistic, Novice***
  There are two flight models available that can be used to control the way in which the aircraft flies. The 'realistic' model allows the player to experience all the flight characteristics of each aircraft such as the stability, control responses, stall and spin characteristics. The 'novice' version provides accurate performance modelling of the aircraft but keeps it within the normal safe flying envelope. This second model allows the player to fly a very stable version of the aircraft without worrying about stalling or spinning.

- **Engine Management** ***Manual, Auto***
  The game offers the player the chance to use many of the engine controls present in the real aircraft. These include such things as Magnetos, Fuel Cocks and Starter Buttons. This allows the player to take control of the engine management, just like the pilot of a real aircraft. These controls may only used with the 'interactive cockpit'. Due to the complexity involved, no keyboard control is provided in this mode. This option is not available if the novice flight model has been selected. If you wish to fly the aircraft without worrying about the management of the engine, select Auto and the computer will control the engine and fuel systems automatically.

- **Prop Pitch Control** ***Manual, Auto***
  This allows the player either to control the propeller blade angle manually, or to let the computer automatically control the propeller, based on the engine speed and the throttle setting for the engine. The automatic system will always attempt to provide the player with the most power appropriate for most flight and combat conditions, but it will not necessarily allow effective windmill braking or propeller feathering
  (see Chapter Six - Section Three).

- **Power Boost** ***On, Off***
  This option allows the player to increase the power of the engine in order to give an advantage during combat. If the power boost is Off, the power produced by the engine will be realistic. When switched On,
  the engine will produce approximately 50% extra power which provides

- **Wind Effects** ***On, Off***
  The wind is modelled at all altitudes and it varies in direction and strength on a day to day basis. The wind will affect the take-off, cruising, bombing and approach of all the aircraft in the game. This option allows the wind to be turned off completely.

- **Wind Gusts** ***On, Off***
  If the wind effects are switched on, then random gusts are also modelled, and their strength depends on the weather conditions each day. This option allows the player to switch gusts on or off. Gusts will not occur if Wind Effects are switched off.

- **Airframe Stress** ***On, Off***
  The aircraft and their pilots are subjected to very large forces during combat and aerobatics. Although the structure of the aircraft is very strong, aircraft were known to break up in the air, especially when pulling out of steep, high speed dives when the aerodynamic forces on the wings and tail section can be very great. The effects of these large forces are modelled in the game and if the player puts too much stress on the aircraft it may break up. These effects can be switched off and there will be no danger of the player damaging the aircraft as a result of very high G manoeuvres.

- **Torque/Slipstreaming** ***On, Off***
  The effects of the propeller, such as the torque reaction in the fuselage, the effects of the rotating slipstream on the tail surfaces and the gyroscopic effects of the large diameter propeller are all modelled in the game. These affect the handling of the aircraft both on the ground and in the air, but can be difficult for an inexperienced pilot. This option allows the player to ignore all of these effects and consider only the thrust produced by the propeller in the flight model.

- **109 Fuel Capacity** ***Realistic, High***
  The Messerschmitt Bf109 has an internal fuel tank with a capacity of 400 litres. This limited the range of the aircraft, restricting it to only 20 minutes flying time over British soil before it had to turn home. This had significant tactical implications for fighters escorting bombers to targets in England and often meant that the fighters had to leave the bombers before they had reached their targets. An external auxiliary fuel tank with a capacity of a further 300 litres was provided for the Bf109. This was made of moulded plywood, and tended to leak significantly with a danger of catching fire, making these tanks very unpopular with the pilots. In order to model the increased range which could be achieved with the increased

Chapter 4 THE BATTLE OF BRITAIN CAMPAIGN

Overview

This chapter provides the basic detail that you will need to be able to control a campaign in the Battle of Britain simulation. You will learn all about the strategic disposition of forces on either side, as well as relevant details of intelligence and supply. The campaign system allows you to take the role of a Commander on either side of the conflict and deploy all available resources to ensure victory for your side.

It's possible to play the campaign straight through from the beginning of the Battle of Britain on July 10th 1940 all the way through until the climax on September 15th. Or, you can jump into the campaign at the start of one of the four separate phases of the Battle.

Section One shows how to access the campaign section of the game. Section Two describes the overall layout of the main campaign screens. The fine detail of the function of each dialogue box within the campaign is left to the context sensitive help system found within the game. Section Three provides a tutorial for playing the campaign from the Luftwaffe side. This includes a mission briefing and some strategic hints. Section Four contains a tutorial from the RAF perspective.

Section One

GENERAL

To enter the campaign, select Campaigns on the Main Menu. The next screen allows you to choose between RAF and Luftwaffe Command. Once you have chosen you will then be asked to select which phase of the campaign you wish to join from the four options at the top of the screen:

- **Convoys**
  This period, from July 10th until August 11th, sees the start of the Battle of Britain. After the Battle of France, many Luftwaffe units were depleted and required rest so a major attack against Britain was not possible immediately. The Luftwaffe strategy was directed towards the attack of British convoy ships in the Channel. The aim was to force the RAF into the sky over the Channel, in the hope that they would be vulnerable to attack. If you wish to play the entire campaign then you should begin with this scenario. At the end of this phase your disposition of forces will be carried forward into the next.

- **Eagle Attack**
  In the phase from the 12th until the 23rd of August the Luftwaffe moved their attack to coastal Radar sites and RAF forward airfields. There tended to be little warning of incoming raids, which left RAF squadrons fighting to scramble in time.

- **Critical Period**
  From the 23rd August until the 6th of September the Luftwaffe moved their attention to attacking inland airfields and strategically important aircraft manufacturing industry.

- **Blitz**
  The German command believed that trying to destroy the RAF on the ground would take too long – so the RAF would be destroyed in the air. The final stage saw the Luftwaffe attacking London to draw out the remaining RAF forces. It culminated in a massive air battle on

Once you have selected your phase, you can choose to start by selecting 'Begin' at the bottom of the screen.

You may then edit your name before once more selecting 'Begin' to enter the campaign proper.

A campaign may be saved at any stage by selecting the Filing Option on the map toolbar from within a Campaign (see Section Two). You will also be offered a chance to save the campaign before quitting. The game is also automatically saved to a file called "AutoSave" whenever you attempt to fly.

The filing option can also be used to abandon the current game and reload an earlier one. It is also possible to load in a saved campaign by choosing the Load Game option from the Main Menu and following the instructions given in Chapter Two.

Playing the Simulation at varying levels of difficulty

The level of difficulty while playing the campaign is set by some of the options in the Mission page of the Sim Config menu. In particular, you should be aware of the skill modifier, tactics and intell(igence) settings. These are discussed in detail in Section Three of Chapter Two. If you wish the most difficult campaign as an RAF Commander, for instance, then set the LW Skill Modifier to Maximum, RAF Skill Modifier to Minimum, Luftwaffe tactics to optimum and Luftwaffe intelligence to Accurate.

CAMPAIGN TUTORIALS

The tutorials in sections three and four should provide you with the knowledge to run a basic campaign. Within the game itself there is an extensive context-sensitive help system that describes the functionality of every choice that is available to you as a Commander. To gain complete familiarity with the tools at your disposal after the tutorial, you can investigate the campaign screen dialogs in more detail.

To gain the most out of the tutorials you should try and follow through from the Luftwaffe Campaign in Section Three below and then onto the RAF Campaign in Section Four. Full management of a campaign is a complex task. The aim of these tutorials is to familiarise you with the background to the campaign, and provide you with the basic details of campaign management.

Every dialogue box displayed within the campaign section has an associated help file that fully describes the function of the contents of the dialogue box. The relevant help file can be accessed by clicking on the question mark at the top right corner of any box. You have the option to print out the help file at any time.

Section Two

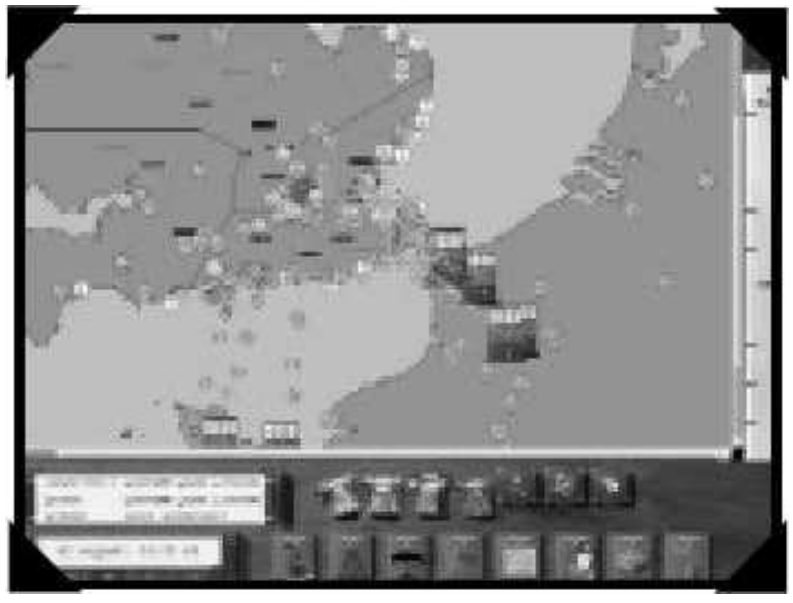
CAMPAIGN SCREEN

The campaign screen is generally dominated by the campaign map, with a set of icons in the top right corner of the screen and five toolbars:

- **The time toolbar**
- **The main toolbar**
- **The map toolbar**
- **The scale toolbar**
- **The teletype toolbar**

The layout of the toolbars and the function of some of the icons is slightly different depending on whether the campaign is being played from the side of the RAF or the Luftwaffe.

THE MAP



The campaign map is capable of displaying the entire area of the Battle of Britain campaign, from northern England to northern France, based on original Ordnance Survey data from the period. The large scale map can be displayed at 4 major levels of magnification, from 400 miles square down to a 50 mile square area. At a finer level of detail the map becomes a continuously scaleable down to a scale of 2 miles square. The zoom level is easily adjustable, and the map may be scrolled, either using the scroll bars at the right and bottom sides of the map, or by clicking and dragging with the left mouse button while the pointer is over the map portion of the screen.

It is possible to change the map zoom by one of three methods:

1. by using the scale toolbar (see below).
2. by clicking with the right button while the mouse pointer is over the map and choosing either the 'zoom in' or 'zoom out' option.
3. rotating the wheel on a Microsoft Wheel Mouse (or similar) while the mouse pointer is over the map. If the mouse wheel zoom doesn't work initially, then try clicking on the map first.

SCREEN CONTROL ICONS

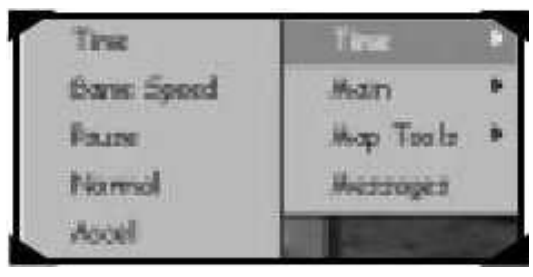
The fixed set of icons in the top right of the screen offer the following functions:

- **Quit**
  Return to the Main Menu.
- **Toolbar Control**
  This gives access to the toolbar dialogue box. This box allows the player to select which of the five toolbars will be displayed on the screen at any one time

- **Size**
  Toggle between full screen and maximized displays.

RIGHT CLICK

Right click while the mouse button is anywhere apart from the campaign map on the campaign screen and a menu system that duplicates the functionality of the toolbars will open.



CONTEXT SENSITIVE HELP

Every dialogue box that is displayed within the Battle of Britain campaign has an associated help file. The help file explains the function of every element and option within the dialogue box. To access help left click on the question mark at the top right of any dialogue box.

MAIN TOOLBAR

The main toolbar consists of nine square notebook icons (eight in the case of the Luftwaffe) at the bottom right of the screen. The name and function of some of the icons varies slightly depending on whether you are playing the campaign from an RAF or Luftwaffe command:

Luftwaffe Icons | **RAF Icons**

Aircraft Allocation

The aircraft allocation dialogue box shows where the nation's current aircraft production is destined, and what is required. There is a line of information for each type of aircraft under production

Luftwaffe Resources or RAF Resources

The resources dialogue shows the location and strength of each Geschwader or Squadron available to central command.

Geschwader Lists or Squadron Lists

The Geschwader and Squadron lists provide more detailed information about strength and battle readiness of the aircraft at your disposal.

Weather

The weather information box shows the day's weather forecast for the south-east England.

Review

The review summary box shows all of the major information about the campaign and the known state of RAF and Luftwaffe resources.

Pilot Info

The pilot info icon brings up the pilot log book.

Target List or Asset List

The target/asset list details all of the major British assets in the south of England.

Mission Folder

The mission folder lists all of the missions that have been planned for the day. It shows all missions that have been authorized and that have been flown and completed. All missions are cleared from the folder at the end of each day.

Hostiles List (RAF only)

So that the process of ordering raids is not too complex, a mission directives dialogue box is displayed at the start of each time period. Directives automatically generate missions based on a broad set of instructions from you. Once you have configured the directives to reflect your broad strategic plans, complex raids will be generated without requiring much more interaction from you.

SETTING DIRECTIVES

From the main menu screen, choose the Campaign option, and request a campaign as a Luftwaffe Commander during the 'Eagle Attack' phase of the battle.

As you first enter the campaign screen you will see the directives dialogue box. The help screen for directives, accessed by clicking on the question mark at the top of the dialogue box, is available for all screens displayed during the campaign.

The time is 6:30 a.m. on the morning of August 12, 1940. A certain number of aircraft are available to you, representing an accurate reflection of the resources available to Luftflotte 2 and 3 at this stage of the war. The losses and damage sustained by your aircraft during the campaign, combined with the rate of Luftwaffe aircraft production, will determine how the number of available aircraft varies as the days progress.

A gruppe can fly one mission per day. You can reserve a percentage of your gruppen for missions in a specific period. At this point, say we wish to increase the number of gruppen available for raids in this first morning period. Click the down arrow in the Bomber Allocation Mid-day box until it is zeroed. Increase the allocation for the morning period so that it reads 60%, and set the Ju87 setting to 'maintain %'.

The section that dominates most of the directives dialogue is used for aircraft allocation. It shows how many gruppen are being directed to attack British targets of a certain type. Some default entries have already been made at the start of this time period. Let's start afresh, by hitting the 'REST ALL' button at the lower right of the screen in order to zero all aircraft entries against targets.

We wish to send our Ju87 Stukas to attack Radar (RDF) targets. Find the aircraft allocation cell for Ju 87s and RDF targets. Click the up arrow until 5 Stukas are assigned. 5 gruppen of Ju87 have now been made available for missions against RDF targets. Note

These vulnerable Ju87 dive-bombers will need some escort. Follow the RDF row along to the Me109 column. Assign 5 gruppen of Me109's by clicking the up arrow five times. We want the Me109's to escort the Stukas closely. Follow the RDF row along to the % Tied field and increase it to 100%. All escort fighters will now fly in close formation with the bombers. It is worth pointing out that the % Free slot lets you specify how much of the escorting force will be flying detached escort – this means they will be flying the same route as the bombers but will be flying ahead, behind or above them by some distance. If these two fields do not add up to 100% then the difference is used for Return escort – these fighters will meet up with the bombers as they return from the target area. (If you wish, you may also determine how these escorts fly relative to the bombers by altering the 'Attached Escort' section further above in the directives dialog.) Click on the Tick on the top right of the box to confirm the campaign orders that you have given.

You are now shown a list of proposed missions generated from your directives. Targets have been automatically chosen based on priority, and gruppen assigned according to availability. More missions can still be added to this list (and, of course, missions can be changed or deleted). Hit the cross at the top right of the proposed missions dialogue box to go back to the directives set up.

Let's assign some of our twin-engined medium bombers to attack airfield targets. On the airfield target row choose 4 He 111 bomber gruppen. Also, assign 3 Me109 and 1 Me110 fighter gruppen as escort, on the same line. We can make half of the fighters fly in close, attached, escort while the rest are detached. In the % tied box set the allocation to 50%. The strafe box should be ticked, which means that fighters will strafe the target if the opportunity presents itself.

On each row to the right of the bomber allocation cells you will find the ‘size per target’ field. This determines how many aircraft will form each separate mission. This in turn affects how many raids will be launched. Since airfields are large area targets we will send 2 gruppen to each target by setting the size field to 2 gruppen. (RDF and convoy targets can often be dealt with using smaller sized raids.) You will notice that the 'Missions' column - the number of raid missions that are being proposed - has dropped from 4 to 2. Two raids will be launched against airfields with these directives.

is a useful tactic for confusing the British defence network. On the airfield line, increase the 'Secondary' target field from 0 to 1. This means there will be one additional target for each raid. Notice that the number of missions has now dropped to 1. So, with these directives, a raid of 4 He 111 gruppen will be launched, and it will split in half near the target area so that two separate airfield targets can be attacked. The automatically chosen targets are likely to be geographically close since the '2nd' target option is chosen.

Click on the tick button at the top of the directives screen to see the new set of proposed missions. The first raid has 120 bombers, escorted by 144 fighters, involved in a raid on two separate targets. Click on the tick at the top of the proposed missions box to confirm these missions.

PART 2

FOLLOWING RAIDS FROM THE CAMPAIGN MAP

OVERVIEW

You are now looking at the campaign map screen. Click on the pause button near the bottom left hand side of the screen, so that we can take our time to understand how everything is laid out. When time is progressing normally you will see the markers representing your raids move across the map. You will receive warnings when most vital events occur.

The campaign map screen is divided into a number of areas:

1. The campaign map, in the upper left, dominates the display - showing southern Britain and northern France. The map is scrollable (use the scroll bars; or click, hold and move with your mouse) and scaleable (click and hold on the scale on the right hand side, or use your mouse wheel, if you have one). Using map filters you can determine how much information is displayed on this screen. At this stage you will see that your directives have already generated a lot of information!

2. The main toolbar is on the lower right of the screen.
   It displays 8 'folder' icons (9 in the case of the RAF) that relate to all of the

Section Four

RAF CAMPAIGN TUTORIAL

COMMAND BRIEFING

- You lead RAF Fighter Command charged with the duty of defending the air space over the United Kingdom. Specifically you must defend your country from the invasion force building up on the continent of Europe. You must ensure that Fighter Command remains an effective force throughout the summer until mid September 1940 when bad weather begins to eliminate the risk of invasion.
- You have 53 fighter squadrons at your disposal: 34 have Hurricanes and the rest are equipped with Spitfires. All told, there are over 600 aircraft in your command. You are limited to scheduling missions for a maximum of 32 squadrons at any one time.
- In pursuit of your campaign objectives, you will respond to threats as they appear on the map display. This map shows the result of collating intelligence about enemy movements from various sources including the RDF and ROC.
- It is possible to define both patrol and intercept missions. Patrols can be redirected to threats when they are in the air. You can either design a mission from scratch personally or just set the overall parameters and let your staff complete the details using 'directives'. (In the following section we will generally call all missions patrols, for brevity.)
- You are cleared to fly missions in Spitfire and Hurricane fighters.

OVERVIEW AND RAF ORGANISATION

Your role as an RAF Commander is quite different from that of a Luftwaffe Commander. The RAF is on the defensive. You must react to incoming raids by scrambling fighters, yet always holding enough in reserve so that you have cover when you most need it. Unlike the Luftwaffe, the RAF plans few missions at the start of each time period throughout the day, other than standing patrols over convoys or other vulnerable assets. You'll scramble squadrons as and when you feel it necessary throughout the day.

codenamed the operation 'Sea Lion'. Initially you can expect to be confronted by Junkers 87D Stuka dive-bombers and the formidable twin-engine Me110 fighter. Later in the campaign you will encounter heavier bombers like the Dornier 17, Heinkel 111 and Junkers 88. The single engine Me109 will act as escort to the bomber formations.

It is vital that you don't damage the integrity of Fighter Command by over committing your forces. Obviously it makes sense to respond to threats against Fighter Command assets. On the other hand, defence of other assets should be limited to the minimum that is deemed to be politically acceptable.

Fighter Command consists of four Groups: 10, 11, 12 and 13. Each group is assigned a geographical area rather than a specific set of squadrons. Squadrons can move from group to group to fulfil the objectives of Fighter Command. Although a squadron can have more pilots and aircraft assigned to it, a complete squadron in the air consists of twelve aircraft. You have 53 fighter squadrons at your disposal: 34 Hurricane and the rest are Spitfires. All told, there are over 600 aircraft in your command.

11 Group covers the south-east of England and so it is in the front line. 12 Group is in central England and 10 Group is to the south-west. Both these groups are actively involved in the Battle. 13 Group is stationed in the north of England. Squadrons in 13 Group do not take part in the Battle; they use the time in the north to recuperate.

10, 11 and 12 Groups are further divided into sectors, which are again based on a geographical area. Each sector has its own control room at an airfield in the sector from where ground controllers 'vector' RAF fighters to their intercepts.

Most of the intelligence about enemy movements is gathered by either Radio Direction Finding (RDF) methods or the Royal Observer Corps (ROC). RDF methods are now universally referred to as Radar. Fighter Commands had two coastal systems in operation during the Battle of Britain. The Chain Home (CH) system was capable of detecting aircraft at a distance of up to about 150 kilometres (90 miles), but this reduced by about 30% for an aircraft at 15,000 ft. The Chain Home Low system was developed to overcome this limitation. This type of radar had a range of about 30 kilometres (20 miles) at low altitude. Neither system could be used to track aircraft once they had passed by the system and flown inland. The job of detecting aircraft over England fell to the Royal Observer Corps. Groups of two or three people were stationed all over the south east of England and they reported all aircraft movements to a central station. This system worked remarkably well - however heavy cloud did have a large effect on its effectiveness. All the information generated passed through a filtering stage so that the information presented on the map was

RAF DIRECTIVES

Note that to avoid repetition, many of the topics covered in the Luftwaffe campaign in Section Three above are assumed when discussing the RAF campaign.

From the main menu screen, choose the Campaign option, and request a campaign as the RAF Commander during the 'Eagle Attack' phase of the battle.

At the start of the morning time period on August 12th 1940 you are presented with a directives dialogue box. You'll notice that it is substantially different from the Luftwaffe directives dialog. It is more concerned with defining how missions will be launched later if the situation and need arises, rather than specifying missions to launch immediately.

The Luftwaffe will be leaning towards raids into mainland England at the start of this 'Eagle Attack' phase. Radar installations, coastal airfields and docks will be their preferred targets.

SETTING UP PATROLS

In the 11 Group Squadron section there is a ‘Holes in Radar’ setting. This setting allows you to set aside a number of squadrons to patrol those areas in the coastal radar net that are not covered. If all of the Radar sites are working correctly then there are no holes in the coverage. One squadron will cover each hole in the net. Hit the tick to confirm your directives. The ‘Proposed Patrols’ dialogue is displayed, showing the patrols that are planned. Click on the tick box to get started.

RAF RESPONSE MARKERS

The battle is now under way. You will see your patrols represented on the map as one token for each squadron. These are representations of the tokens used by the RAF during the war. The top white bar shows the number of aircraft in the patrol, and the blue bar at the bottom shows the current altitude on thousands of feet or metres - depending on the default units setting. The square ‘lollipop’ above the top of the token displays the squadron number. There can be more than one lollipop above a patrol, as more squadrons are added. If you click on an RAF token the mission folder will be displayed and the proposed route to be taken by the patrol will be highlighted on the campaign map. A round lollypop indicates that only part of a squadron has been launched. The colour and number of lolipops correspond to the callsigns of the sections.

the 'squadron' button at the lower right corner. The squadron details are displayed as part of the airfield dialogue relating to where the squadron is located. Select the 'general' tab for the airfield at the top of the airfield dialog, and click on the 'centre' button at the bottom. The airfield will now be centred on your map display - and you can zoom in to see its precise location.

AUTHORISING SCRAMBLES

As the day progresses, the Radar net (assuming it has not been knocked out) will detect a build-up of Luftwaffe raids over France. Sometimes the raids will be detected late as they cross the channel into southern England. As soon as a raid is detected you will be asked whether you wish to set up an intercept patrol. Select the 'Ok' button, and a scramble response mission will be automatically generated as soon as possible - usually within a few minutes. The Task button will do the same thing but opens the relevant dialogue to edit the mission before it leaves the ground. We will learn more about this later.

There are also occasions when you will be asked if you wish to take over control of aircraft in intercept situations. At this stage you should decline the offer.

MISSION FOLDER

Open the mission folder on the main toolbar. Each line shows the details of an RAF patrol mission. The order number is a unique identifier for today's missions, starting with F001 identifying the first RAF patrol of the day. The squadron column displays the relevant squadron number and, in brackets, the number of aircraft from that squadron involved in the mission. The status field shows the current state of action of the squadron. If the status shows 'At 30 mins', then the squadron is at a low state of readiness, prepared for takeoff in thirty minutes. Some squadrons will be 'forming' after takeoff - in other words still manoeuvring into their patrol configuration.

If the objective is a place name, then the squadron's mission will be to patrol that asset or area. If the objective is a four character identifier, then the objective is a Luftwaffe raid. In the case of a raid, its currently known size and status are displayed along with the raid's target and status if it has been confirmed. Luftwaffe raids have an H prefix, and the three digit identifier gives the order of Luftwaffe raid detected during that hour of the day. For example, the third raid detected after 7:00 a.m. would be H703.

ALTERING MISSION PROFILES

Missions that have yet to take off can be re-'tasked' by selecting the task button at the lower part of the mission folder. Re-tasking allows you to alter the numbers of aircraft in a mission, the squadrons they come from, the location of the targets, as well as the fine details of fighter attack methods. It's a very precise tool. As an example, in the task dialog, find a squadron under either the Hurricane or Spitfire tab that represents part of the unit involved in the mission. Click on the name of the target for that squadron, and you will be offered to select a target on the main campaign map. If you click on any British asset or Luftwaffe raid displayed on the map, it will become the new chosen location for the highlighted patrol. Obviously the first type of mission will be an area patrol and the second an intercept against a raid. Select the tick at the top of the task box to approve the new target.

Once a mission has taken off, however, it can only be 'revectored', or ordered to return to base 'RTB'. Revectoring a mission in flight allows you to alter the target. The easiest way to do this is to select a new target on the campaign map. A target can be any Luftwaffe raid. Patrols over radar will be automatically vectored against any threats that come close to the radar site. Patrols over other assets will only automatically vector to defend their asset. As a player you may decide that it is quicker to revector a patrol to a raid than it is to scramble an intercept from the ground.

ROUTES

You will find that the dialogs and controls relating to route management are very similar to the Luftwaffe but there are some differences. A special ‘estimated location’ waypoint marker is diplayed on the map route for missions assigned to intercept an incoming raid. This shows the location where the interception is expected to take place given the raid’s current course.

TRACKING RAIDS

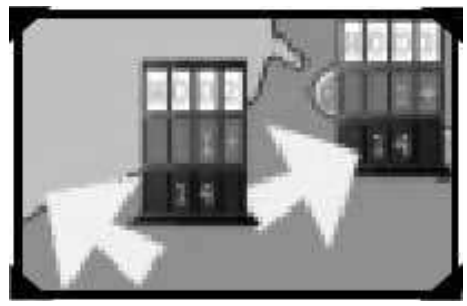
As the campaign progresses and more raids are launched you will be put under increasing pressure. You must develop a strategic and tactical picture based on the events developing before you. There are different tools available to aid you in keeping track of the enemy raids:

1. **Watch the map**.

   Always keep your eye on the campaign map. Raid

2. **Use the intelligence teletype**.
   This provides the nerve centre for all intelligence information. After a time, the campaign map can become cluttered with Raid and RAF response markers. There's always the danger that as Commander you will lose track of a raid or underestimate the threat it poses.

3. **Use the Hostiles List**.
   The hostiles list is a modern tool (unavailable in the 1940s) that helps you keep track of all raids and responses. Open the 'hostiles list' dialogue by clicking either on a raid token on the map or on the hostiles list icon at the left of the main toolbar.



   The hostiles table lists all of the Luftwaffe raids that have been detected. Each line shows the current information that has been gathered about the raid. The columns at the end of each line display the number of RAF aircraft currently flying out to intercept the raid, the number currently in combat, the number returning to base and a running tally of losses for each side. Obviously a major raid with no planned response is potentially a very serious threat.

   This list is very useful as it lets us see an overview of all the raids and therefore make sure that they all have adequate responses. Raids that are inbound or in the target area pose more of a threat to your assets than those that have dropped their bombs and are going home. Click on a raid and you can automatically 'authorize' an appropriate response to the raid. The fine details of the authorised response can be tuned in the mission folder, which is why the mission folder is displayed once the 'authorize' button is selected.

DEBRIEFING SORTIES

Once a squadron has returned to its home airfield, details of its sortie become available. Highlight the squadron in the mission folder and select the squadron button at the bottom right to display the squadron dialog. Click on the 'details' button to display the squadron diary and full details about the sortie just completed.

END OF A PERIOD

At the end of the morning period the directives dialogue will be displayed for the mid-day session. Pause the game briefly, so that you can review the outcome of the

and destroyed aircraft, and the assets list will show the accumulated damage to all major asset types. A glance at the most recent teletype output will also help you to keep track of the recent key events. You will need to use the information you have gained to help plan your strategy for the next session.

At the end of each day of the campaign - after the third period of the day - there will be a summary of important events and some video footage. Then it is on to the next day. Occasionally you will notice that you'll be offered to skip a particular session because of foul weather. Normally, you should do so. In bad weather it is unlikely that there will be enemy action, and you need to conserve your resources and gain some rest.

DETECTING AND INTERCEPTING RAIDS

It is possible for raids to slip through the radar net, avoid detection or confuse controllers if:

- The radar picture is confused due to too many overlapping raids.
- A raid comes in at low level.
- The raid consists of few aircraft.
- Cloud cover obscures the raid from the Royal Observer Corp who then have to rely on sound location equipment.
- The raid splits in the target area.
- The raid uses a dogleg and does not reveal its intended target until the last possible moment.

MANAGING RAF RESOURCES

If you select the ‘resource’ icon in the main toolbar, you'll bring up the RAF resources display box. This displays ALL of the aircraft available to the RAF according to group - the major organising principle of RAF fighter command. Each group is divided into a number of geographical sectors, and you will see that the RAF resource list for each group is divided by sector. Each sector's squadrons are controlled from one sector control station, which is listed at the start of each row. If you look at the map of England at lower levels of zoom you will notice that the map is divided into the

- There are not enough squadrons in a particular sector to deal with concentrated raids against it.
- The current airfield is too far forward and the early warning system is down, and hence it is in danger.

There are 2 main ways of transfering a squadron – by using the Directives dialogue or the Airfield dialog.

- **Directives**:
  The Front Line Airfields option at the top of the dialogue allows you pull your squadrons back or move them forward through 3 bands of airfields: North London, South London and Coastal. The default is 'Coastal' airfields. If you change this to 'South London' then any squadrons on coastal airfields will be pulled back and relocated at available airfields in North and South London. South London is the new front line.

  This is a dramatic and sweeping change so use it in the right situations. For example, make South London the front line if radar is out and Coastal airfields are getting hammered, or if London is being raided.

  The transfers will take place at the end of the current period, so during the period the squadrons will still be available for duty.

- **Airfields Dialog**:
  At the bottom of the squadron page of this dialogue are two combo boxes. You can select a Group and then select an airfield within that group to transfer to. You can only move to airfields that have space to accommodate further squadrons. There are also restrictions when trying to move squadrons out of Group 10 and 12, as the controllers for those groups must have a minimum number of squadrons available at all times.
  Any requested transfers will take effect by the start of the next period. The squadron will still be available for duty during the current period.

ASSETS AND PRODUCTION

To get an overview of the state of your assets open the asset list dialogue from the main tool bar. This is similar to the Luftwaffe's target list.

- Airfields
  The airfield type shows the command that the airfield comes under. Fighter Command airfields

Naval types come under the Jurisdiction of Coastal command. Others are Bomber command or training units only used by your fighters when making emergency landings. The Luftwaffe acting on poor intelligence will often attack your Naval and Bomber airfields. This is good and bad – it means less attacks against fighter stations but the loss of other staff and resources.

- **Docks**
  An industrial and commercial target. Docks are not repaired within the time frame of the battle. You cannot simply hold your fighters back and let the docks take a pounding. If too much damage is sustained then the Prime Minister and his cabinet may well step in to order your replacement as Commander.

- **Convoys**
  The coastal transports were kept in operation in the early phase of the Battle to show to Germany and the world that England stood defiant in the face of the Luftwaffe. Towards the end of August it was accepted by those in command that the battle for the Channel was lost. Ships were no longer paraded up and down the south coast. The cost in lives of crewman and pilots, and of aircraft and ships was high.

  As with Docks, if you neglect to provide adequate cover for the convoys then your removal will be requested by the Government.

- **Radar**
  If Radar is knocked out then mobile units can be brought in to cover the gap but they are not as efficient.

- **Factories**
  The most important factories are those used to manufacture components for fighter aircraft and those that actually assemble the finished fighters. The number of fighters that can be assembled is restricted by the output from the component factories. The vulnerability of these sites is recognised early in the battle and preparations are made to disperse production throughout workshops in the nearby areas.

  Open the asset list and view the Factory page to see all your factories and their production type. Find the Woolston Supermarine factory and open its dossier by clicking it then the details button. The dossier will tell you the current weekly production capacity for that factory. Damage to the factory will diminish its output or stop it all together.

THE ULTIMATE OBJECTIVE

Operation Sealion, the invasion of Britain, is planned for September 1940. The date is flexible based on the success of the Luftwaffe. If Luftwaffe air superiority is not secured by September 15th then the invasion will be postponed indefinitely.

German command requires that the RAF is diminished as a fighting force and has insufficient fighters to counter the Luftwaffe over the Channel and landing areas. If the Luftwaffe believes that they have accomplished this then the invasion date may be brought forward.

You will be informed of these events in the End of Day news.

Overview

Multi-Player mode allows you to fly Battle of Britain missions with up to seven other flyers over the Internet or a network, and with another player over a direct serial or modem link. In multi-play you can play Death Match, Team Play or several Quick cooperative or adversarial missions. You can select any of the available aircraft that are flyable in the single player mode, although you cannot take the role of a gunner. The dynamic campaign is NOT a multi-player option.

PRELIMINARY NOTES

Some things to remember for all multi-player games are as follows:

- It is a good practice to reboot your computer prior to playing online especially if you have been on the Internet or running other programs for an extended period of time. Web browsers often keep your online history stored in memory, which sometimes can reduce your available RAM to play the game.
- Remove any programs from memory running under windows that aren't absolutely essential to running your system (e.g. ICQ, Real Player etc).
- When using any third party voice communications program (e.g. Roger Wilco, Battlecom, and Teamstream) try not to activate voice communication when a player is trying to join or when you are waiting to enter a mission.

Several different starting positions are available:

DEATH MATCH SCENARIOS

Implode: Players are headed directly into the centre of a circle of players.
Pairs: Players start out side-by-side heading in the same direction.
Wheel: Players are heading around in a circle.
Same altitudes: Players are going head-on at the same altitudes.
Different altitudes: Players are going head-on at different altitudes.
Explode: Players are heading directly away from a circle of players.
Implode/Explode: Implode and Explode are selected at random.
Flyby: Players start side-by-side heading in opposite directions.

TEAM PLAY SCENARIOS

Flights no advantage: Opposing flights heading towards each other.
Flights Luftwaffe advantage: Luftwaffe aircraft start behind RAF aircraft.
Flights RAF advantage: RAF aircraft start behind Luftwaffe aircraft.
Flights random advantage: Advantage of RAF or Luftwaffe selected at random.
Elements scattered: Groups of two players start out together, but scattered from other two player elements.
Elements close: Groups of two players start out together, but close to the other two player elements.
Singles Implode: Players are heading directly in the middle of the circle of players.
Singles Explode: Players are heading directly away from the circle of players.

QUICK MISSIONS

Allows you to play with other players and AI aircraft in fifteen of the quick shot missions available in the game. You can play cooperatively or head to head with players and AI aircraft from both sides. Choose any of the available missions on the quick missions screen and select Ready Room to continue.

JOIN GAME

The Join Game selection at the bottom of the service provider selection screen allows you to join a game created by another host. What happens depends to some extent on your connection type:

- **IPX connection (see also "Selecting a connection type" above)**
  There is no extra information required for an IPX LAN connection. Two to eight players can "join" a game. A list of network games available will appear. Select the one you wish to join by clicking on it and then clicking select. You will then be taken to the game selection screen. If no names appear under the session list, then no games are available.

- **TCP/IP Connection (see also "Selecting a connection type" above)**
  A windows dialogue box will appear asking you for the name or IP address of the computer that is hosting the game. Enter the address and click on OK. If you are on a LAN, leaving the address blank will search the network for available games. Once your computer has connected to the host a list of games will appear. Select the one you wish by clicking on the name and then clicking select. You will then be taken to the game selection screen.

- **Modem Connection (see also "Selecting a connection type" above)**
  A windows dialogue box will appear allowing you to configure your modem and provide the telephone number of the computer you wish to connect to. Once you are satisfied with your modem configuration and have entered the phone number click on Connect. The game will then attempt to connect you to the host computer and if successful you will be taken to the game selection screen.

- **Serial Connection (see also "Selecting a connection type" above)**

Your port settings, apart from Port, must correspond with the host's settings for the game to connect. Once you are satisfied click on OK. The game will then attempt to connect you to the host computer and if successful you will be taken to the game selection screen.

GAME SELECTION SCREEN

Once you have connected to the host computer you will be taken to the game selection screen. This allows you to view the game setup that the host selected. You can also enter your name and, if the game is Team Play or Quick Mission, select the side you wish to play on. If the game has a password that you don't know, you can request entry by clicking on the button to add your name to the host's Visitor's Book. If the host decides you can join then you will be able to join after a short period of time.

READY ROOM

If you have selected either Death Match or Team Play and are ready to join the game click on continue and you will be taken to the Ready Room Screen.

Whether you have created or joined a game, you will eventually end up in the Ready Room. The Ready Room Screen displays players currently in the game, along with aircraft chosen and their score. It also allows you to chat to other players.

In Team Play and Quick Missions, RAF players are listed first, followed by Luftwaffe players. The players' names are followed by the aircraft they have chosen, the game screen they are currently in and their score.

To chat to other players type your message in the box and press Return. In Team Play or Quick Mission games you can choose to chat either to your side only or to all players by clicking on the appropriate tick box at the top of the screen. To chat to an individual player, click on his name. The name will highlight and your messages will be sent only to that player until you click on another name or choose everybody on your side only.

for instance when you are a game host:

- **Quit**
  Quit the game and return to the main user interface screen.

- **Fly**
  In Death Match and Team Play games when everyone is ready the host can click on Fly and the game will begin. If a player joins the game while the other players are flying then he will be able to click on Fly to join in.

- **Frag**
  In Quick Shot mission games, clicking on Frag will take the player to the Frag screen. Here you will be able to choose which aircraft position you wish to fly. Chat facilities are available as in the Ready Room screen, but messages will be sent to all players. To choose an aircraft to fly, click on the pilot name. You cannot choose an aircraft that has already been chosen by another player. To unassign yourself from an aircraft click on another aircraft or click on the unassign tick at the top right of the page. When all players have chosen their aircraft the host can click on Fly and the game will begin. A player may join a game after it has begun, while other players are flying. Simply choose an aircraft in the Frag screen and select Fly to join in. Aircraft that have been killed will be labelled as 'KIA' and cannot be selected to fly in.

- **Visitors**
  A new player wanting to join the game, but who doesn't know the password, should click on "Add my name". A message will appear in the host's chat window indicating this request. The host should first click on the Visitors Book and then on the Status of the player - which will be

through the structure of the aircraft as a shaking, and is a good warning that the wings are approaching a stall. A stall can happen at low speed in level flight as the pilot pulls back on the stick to keep the nose of the aircraft from falling, or in a tight turn when he is pulling back to achieve a high turn rate.

Fighter aircraft like the Spitfire are designed to be highly manoeuvrable, and therefore the pilot is provided with lots of elevator power. This means that he can pitch the aircraft up or down quickly and enter a tight turn easily, but he must also be careful not to pull too hard on the stick and stall the wings. The Spitfire would enter a stall well before the control stick had been pulled back to its limit.

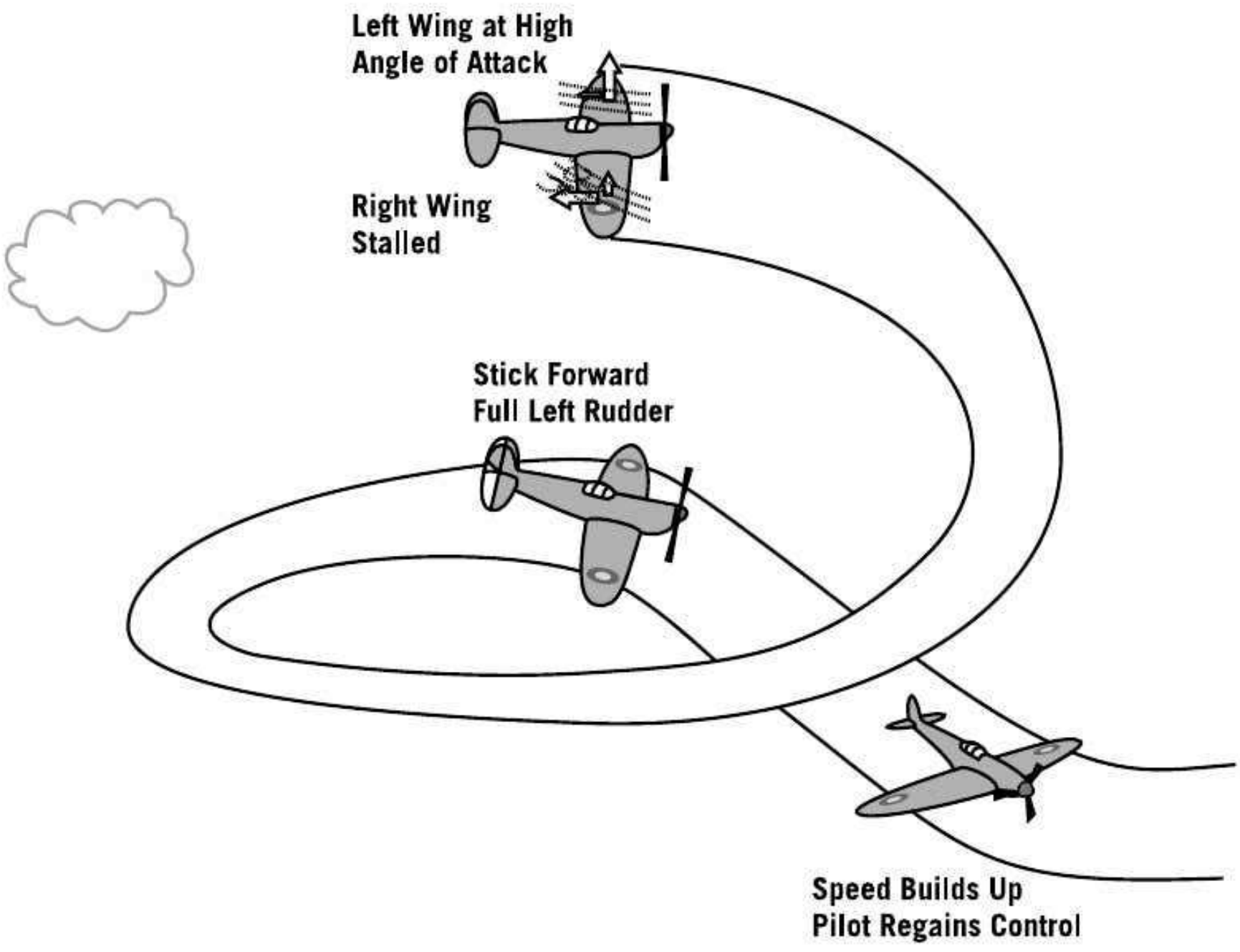
When the wings are near or beyond the stall angle, the ailerons usually loose their effectiveness as they are no longer in smooth laminar airflow. Sometimes lowering the aileron on one side of the aircraft can cause that wing to stall earlier than the other and hence result in the aircraft rolling the opposite way to expected. Therefore, the pilot must take care when using the ailerons at low speed, such as during take-off and landing, or in a tight turn.

If the aircraft enters a stall and the pilot holds the stick all the way back, the speed will eventually become so low that the wings can no longer produce enough lift to hold the weight of the aircraft in the air and the nose will drop rapidly. If the pilot now centres the stick, the aircraft will dive and regain speed such that the wings begin producing lift again and the pilot regains control. If the aircraft is not completely straight when a stall occurs, one wing may stall while the other continues to produce lots of lift. If this is the case, the stalled wing will drop and the aircraft can rapidly enter a spin during which the pilot have very little control. (The pilot can deliberately enter a spin by applying full rudder just before the stall is reached.) The nature of the spin will depend on the characteristics of the aircraft but in general, altitude it lost very rapidly and if the spin in not corrected the aircraft is likely to

tail surfaces in no longer smooth, and therefore the elevators have little effectiveness. Attempting to raise the nose of the aircraft by pulling back on the stick will only result in increasing the stall and worsening the spin.

To recover from a spin, the control stick should be held central or pushed forwards and full opposite rudder should be applied. This should be maintained until the aircraft stops spinning and begins to build up speed in a dive. Once the aircraft has accelerated to the normal flying speed, the pilot will regain control and can raise the nose of the aircraft and continue flying.

The player can also use the Spin Recovery cheat to regain control of the aircraft by holding down Shift S until the aircraft stops rotating and the controls regain their effectiveness.



Stalling Speeds

As the aircraft loses speed, the pilot must pull back on the stick to maintain enough lift to keep the aircraft flying at the same altitude. If he attempts to maintain altitude with the throttle closed, the aircraft will eventually slow down so much that the wings cannot produce enough lift and the aircraft stalls. The approximate speed at which this will occur is given below. These speeds are correct for a normally loaded aircraft at sea level (i.e. indicated air speed) with its undercarriage and flaps retracted.

Supermarine Spitfire . . . . . .75 m.p.h.
Hawker Hurricane . . . . . .80 m.p.h.
Messerschmitt Bf 109 . . . . . .100 m.p.h.
Messerschmitt Bf 110 . . . . . .90 m.p.h.
Junkers Ju 87 . . . . . .70 m.p.h.

Stalling And Spinning Characteristics

Each type of aircraft will have its own specific stalling characteristics which will depend on the shape of the wing cross-section and the weight and geometry of the aircraft. The behaviour of the aircraft will also be effected by the extension of devices such as flaps and gears, and damage to the wings and tail surfaces as well as the fuel load, the speed and the altitude.

- **Novice Model**
  If the Novice flight model is being used, there is no danger of the player stalling or spinning the aircraft at all. Pulling all the way back on the control stick will bring the wing almost to the stall limit but not beyond. If the aircraft looses too much speed, the nose will drop and the speed must be built up before level flight can be restored.

- **Spitfire**
  When the stall occurs, there is a violent shuddering throughout the aircraft and there is also a tendency for the aircraft to flick over, particularly in a high speed stall. Unless the control column is pushed forward rapidly, the aircraft is likely to roll and a spin will result. The aircraft can enter a flat spin, which may be irrecoverable and a number of Spitfires were lost in this way. The loss of height involved in recovering from a spin may be large, and the pilot should allow the aircraft to reach 150mph in the resultant dive before starting to raise the nose.

- **Hurricane**

in the process. A speed of 150 mph should be attained in the dive before the pilot attempts to return to level flight.

- **Bf109**
  This aircraft is fitted with automatic leading edge slats which will open at about 20mph above the normal stalling speed. These help to keep the airflow over the top surface of the wing smooth and laminar and delay the occurrence of the stall. Without these slats, the aircraft would have to take-off and land at higher speeds which requires a greater distance of runway and can lead to more serious accidents. Although the fighter stalls at quite high speeds, this is gentle, even under G, with no tendency to spin. The onset of the stall is signalled by buffeting of the elevators typically followed by the gentle dropping of the nose and left wing. The Bf109 would never enter a flat spin and there was never any difficult in recovering from a spin.

- **Bf110**
  Like the Bf109, this aircraft is fitted with leading edge slats which will open automatically as the airspeed reduces. Care should be taken when using only one engine as this can lead to uneven airflow over the two wings, causing the aircraft to swing and bank, and may cause uneven stalling of the wings leading to a spin. This is particularly hazardous when the flaps are extended and when making a single engine approach, with the stationary propeller feathered, the flaps should not be lowered by more than 25 degrees.

- **Ju87**
  The Ju87 is a stable bomber rather than an agile fighter. For this reason it has large tail surfaces giving it inherent stability and gentle stall characteristics. During the development of the Ju87B from the Ju87A, the fin was enlarged to compensate for the change in the engine fitted, and this had the effect of making the aircraft almost spin-proof.

The Battle of Britain did not end, however, with the fires in London on September 15th, although clearly that date represented a climax and it provides an ending to this simulation. Attacks on London continued, during daylight for a while longer yet, although by smaller formations. Successful attacks were made on various targets connected with the British aircraft industry, although on September 30th, KG55's He 111s took a beating during an ill-fated raid on the Westland Aircraft Factory at Yeovil in Somerset. As a result, the He 111 was transferred to the night blitz, which had already started against British cities and which continued right up until May 1941.

Although Britain's cities continued to suffer at night given that nocturnal defences remained in their infancy, it was recognised that RAF Fighter Command had won the daylight battle lasting 16 weeks. The British Prime Minister paid tribute to RAF Fighter Command: -

> "The gratitude of every home in our island . . . goes out to the British airmen, who, undaunted by odds, unwearied in their constant challenge and mortal danger, are turning the tide of world war by their prowess and devotion. Never in the field of human conflict has so much been owed by so many to so few."

Dilip Sarkar has been fascinated by the Battle of Britain since childhood. Over the last 20 years he has compiled a huge archive of memories and photographs from primary sources including surviving veterans and the relatives of casualties. He is now the author of 12 highly acclaimed books on the Battle of Britain and related subjects.

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3d effects and sound effects: . . . . . .Robert Slater
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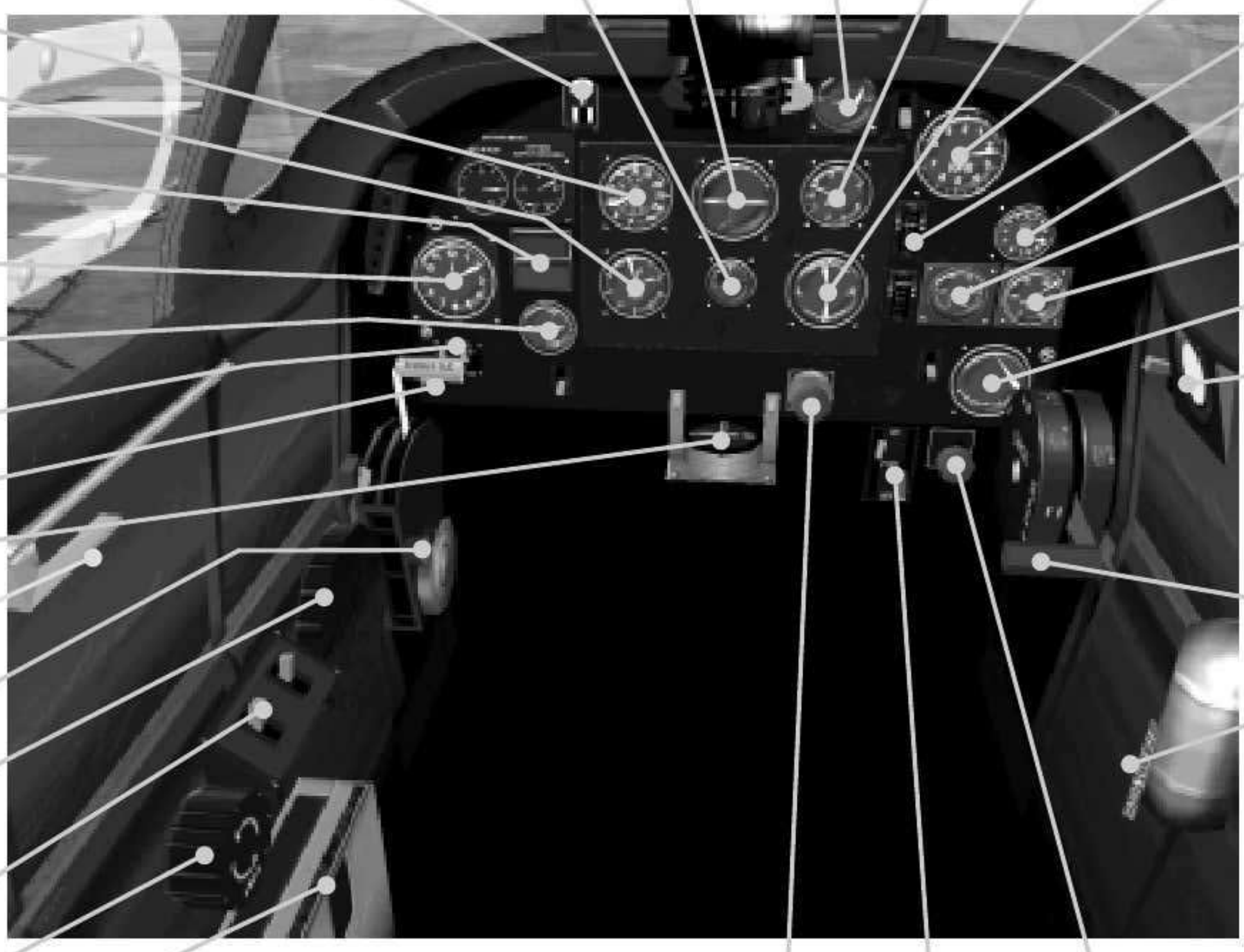
SPITFIRE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Voltmeter
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Slip & Turn
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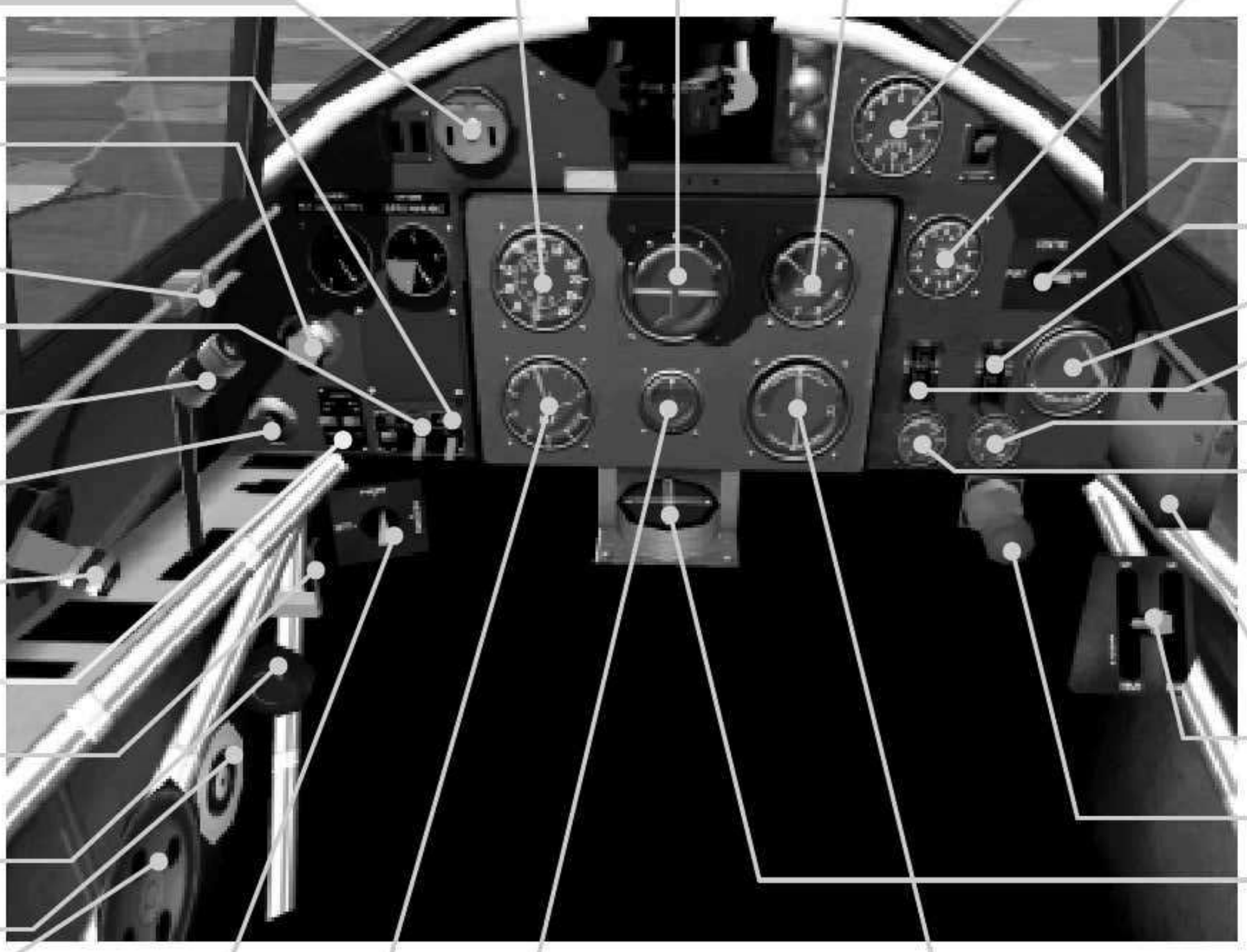
Fuel pressure
Boost gauge
Oil temperature
Radiator temperature
Fuel contents
Radio
Undercarriage lever
Emergency undercarriage release lever
Map box
Primer pump
Fuel cock
Engine starter

HURRICANE



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Primer pump
Directional compass
Turn and bank indicator
Fuel selector
Altimeter
Compass

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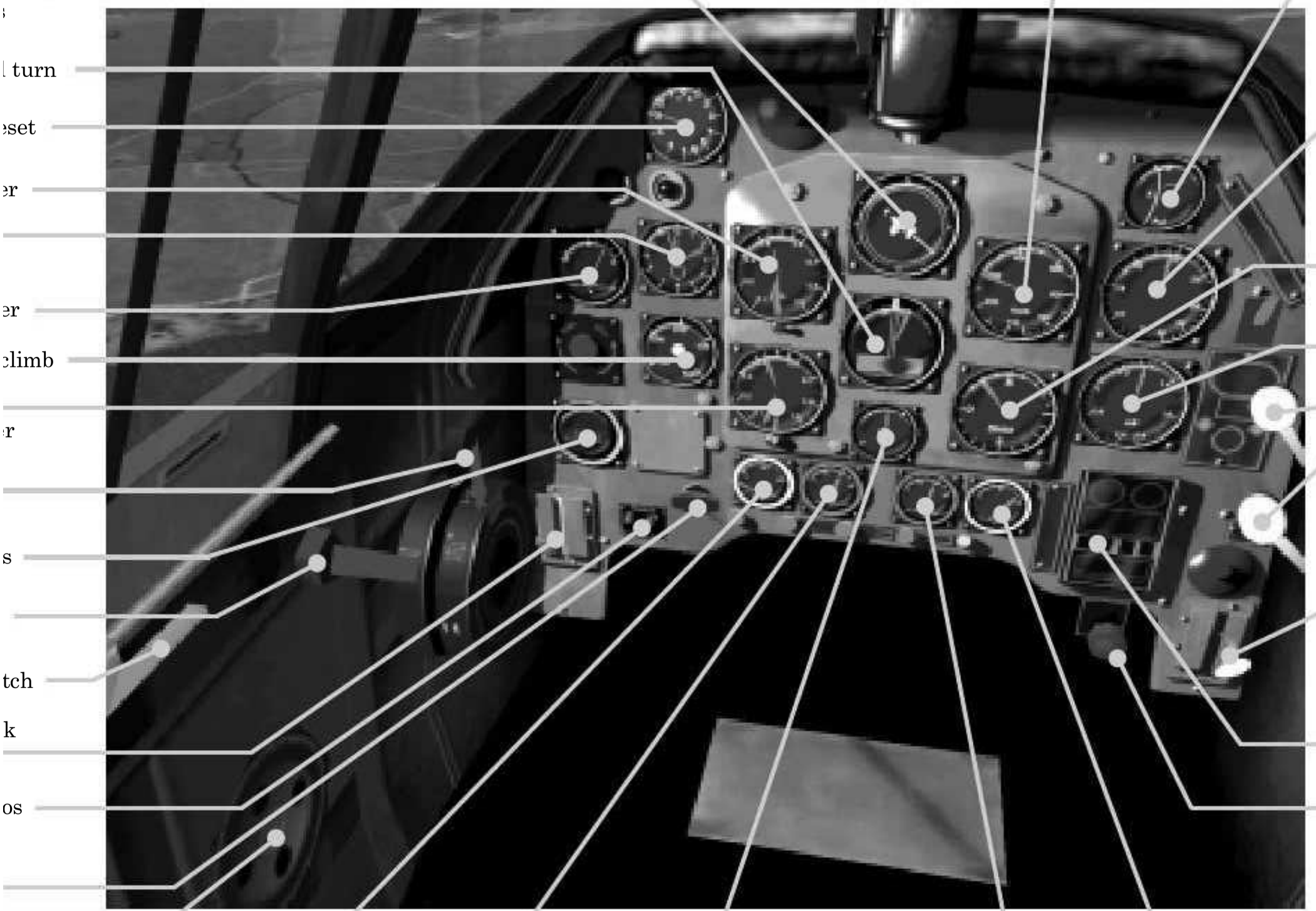
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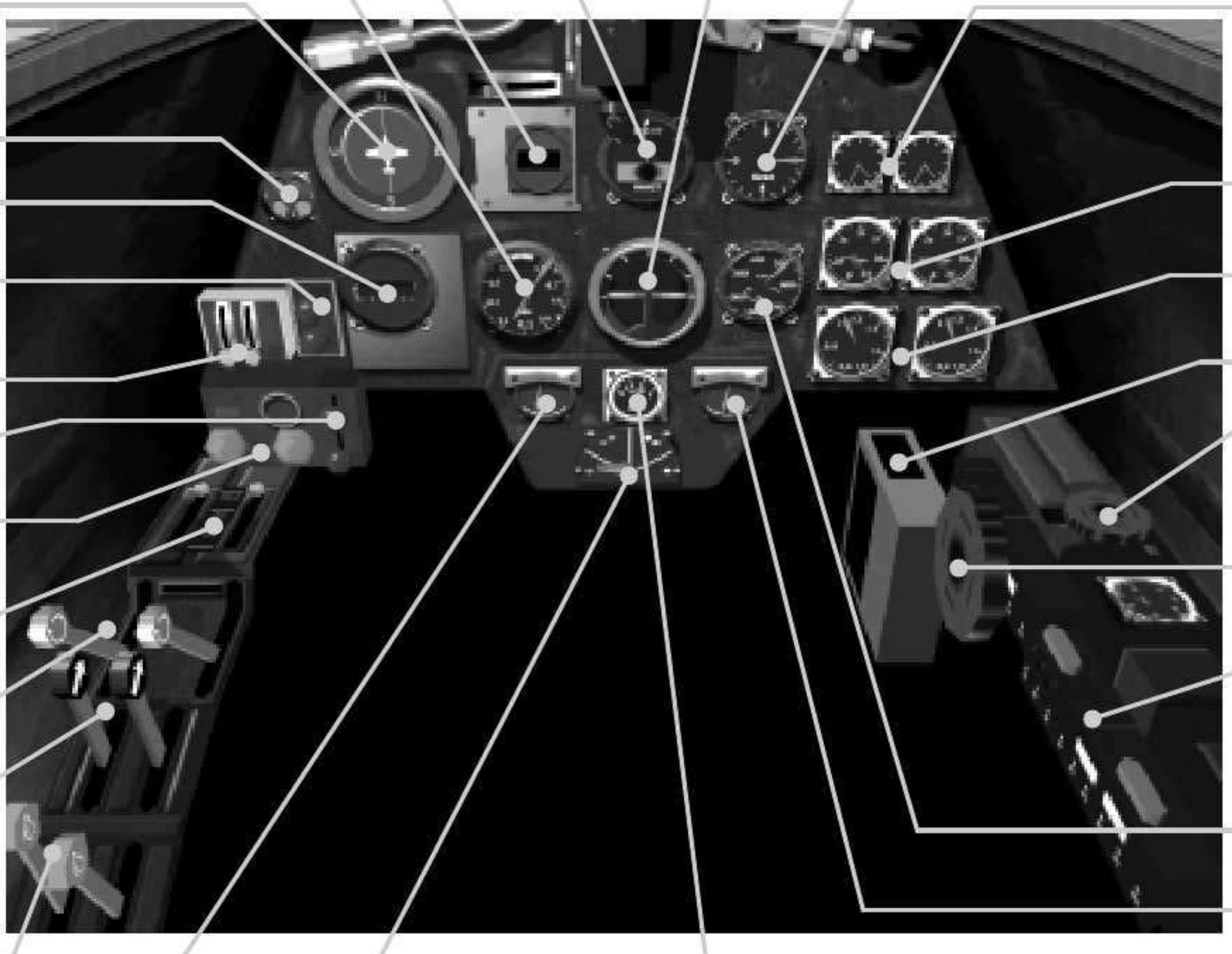
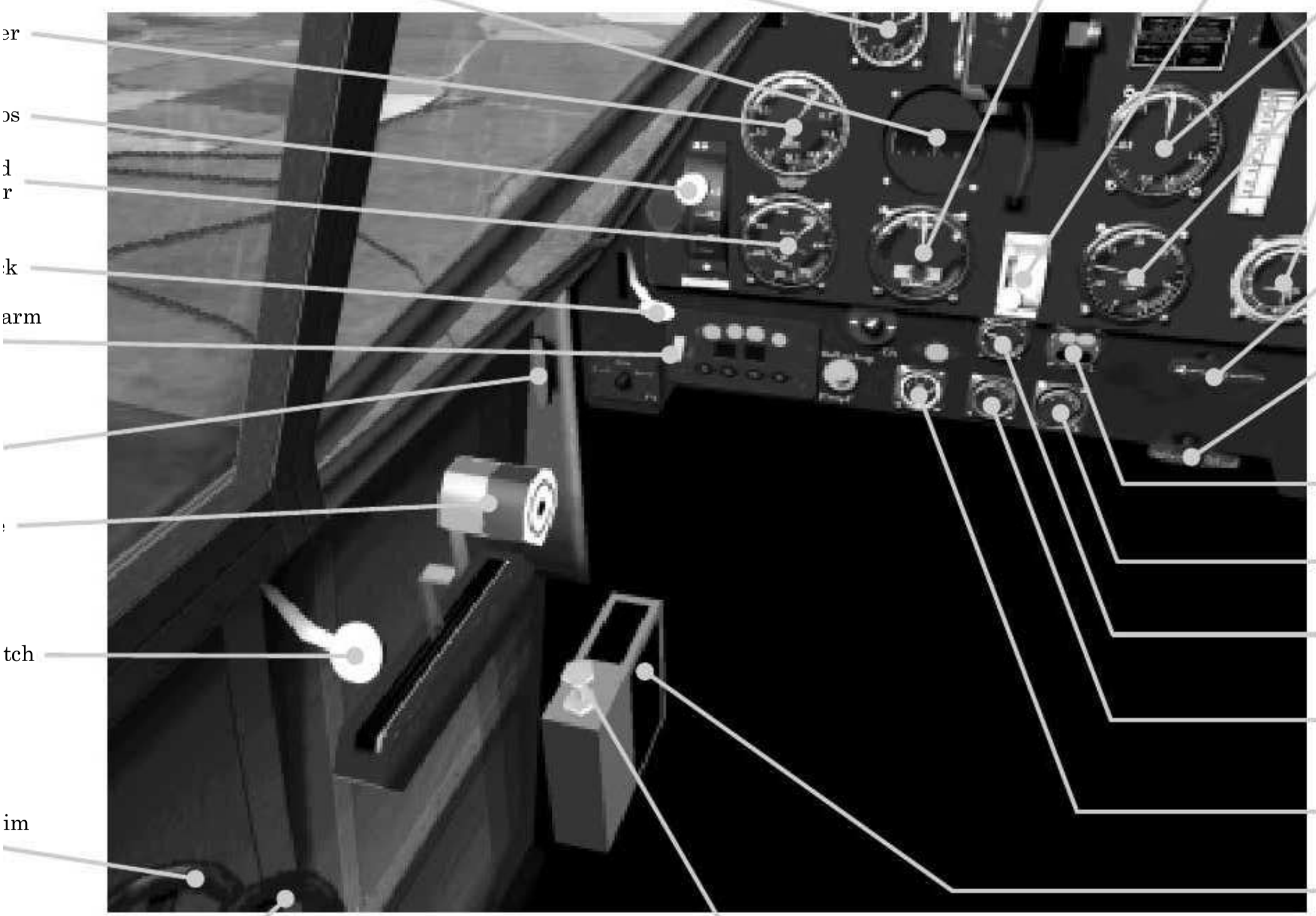
Fuel contents gauge
Radiator temperature
Propeller pitch
Oil temperature
Oil contents gauge

ME 110


Altimeter
Gun rounds
Slip and turn indicator
Artificial horizon
Rate of climb
Propeller pitch
Engine speed
Boost gauge
Map box
Rudder trim wheel
Elevator trim wheel
Engine starter levers
Airspeed indicator
Radiator temperature
Fuel contents
Fuel contents selector
Radiator temperature

ME 109


Compass
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